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**DR. ZSOLT BADICS**


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**2030 Érd  
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**WORK EXPERIENCE**


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- 2020 - **Research Fellow, Dept. of Broadband Infocommunication Systems and Electromagnetic Theory, Budapest Uni. of Technology and Economics (BME).** Numerical modeling and computation of EM (electromagnetic) waves, especially the development of attenuation models for RF wave propagation through vegetation. A related research area is the stochastic modeling of EM waves propagating through vegetation as stochastic medium. Another main research direction is the theoretical research and algorithm development (and implementation) in the area of the quasistatic approximation of electromagnetics fields (EQS, MQS, and EMQS aka Darwin approximations).
- 2012 - **Founder & Chief Scientist, Tensor Research, LLC., U.S.A.** Specializes in R&D of numerical techniques for computational electromagnetics and physics using new algorithm and software development paradigms especially targeting heterogeneous (CPU+GPU) systems. An emerging focus is the efficient numerical evaluation of electromagnetic field exposure to human bodies due to portable, wearable and implantable wireless devices.
- 2007-2011 **Director, Algorithm Development, Rhythmia Medical, Inc., U.S.A.** (acquired by **Boston Scientific Inc.** in 2012) Supervised the development of real-time forward and inverse computational electrophysiology algorithms for imaging the electrical behavior of the human heart.
- 1997-2007 **Senior Research and Development Engineer, Ansoft Corporation, U.S.A.** (acquired by **ANSYS, Inc.** in 2009) Principal designer and developer of the CAE computational modeling tools ePhysics, Maxwell 3D and HFSS.
- 1997 - **Founder and Managing Director, Em-Scientific Kft., Hungary.** Engineering consulting in numerical modeling of electromagnetics fields and multi-physics phenomena including the solution of related direct and inverse problems.
- 1992-1996 **Chief Engineer, Nuclear Fuel Industries, Ltd., Japan.** Led a team that developed finite element analysis and inversion software tools for eddy-current NDE inspection devices for the nuclear industry.
- 1992 **Visiting Researcher and Lecturer, Faculty of Engineering, University of Tokyo, Japan**
- 1991 **Visiting Researcher, IGTE, Graz University of Technology, Austria**
- 1987-1992 **Assistant Professor, Budapest University of Technology and Economics, Hungary**

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**EDUCATION AND QUALIFICATIONS**


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- 1992 **“Candidate of Technical Sciences,”** Qualification at the Hungarian Academy of Sciences for Advising Research in EM Field Computation”, Hungarian Academy of Sciences, research site: Department of Electromagnetic Theory, Budapest University of Technology
- 1992 **Ph.D.** in Electrical Engineering, Budapest University of Technology
- 1984 **Dipl. In. (with honors)** in Electrical Engineering (equiv. M.S.E.E.), Department of Electromagnetic Theory, Budapest University of Technology

## RESEARCH AND DEVELOPMENT ACTIVITIES AND EXPERIENCE

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- Stochastic modeling of EM waves propagating through vegetation as stochastic medium, especially the development of attenuation models for RF wave propagation through vegetation.
- Theoretical research, and algorithm development and implementation in the area of the quasistatic approximation of electromagnetics fields (EQS, MQS, and EMQS aka Darwin approximations).
- Accurate and fast numerical assessment of compliance with human electromagnetic field exposure. The research focuses on the EM radiation effects of portable, wearable and implantable wireless devices.
- Numerical methods in computational electromagnetics, optics, and electromagnetics-centric multiphysics.
- Fast finite element techniques for computational electromagnetics using new HPC (high performance computing) algorithm and software development paradigms in heterogeneous (CPU+GPU) systems.
- Fast inverse and forward computational techniques in biomedical imaging, bio-electromagnetism and eddy-current nondestructive evaluation (NDE).
- Computational electrophysiology (EP).
- Consulting in development, verification and validation of computational models for simulation software prototyping.
- Experienced manager of technical teams developing computational electrophysiology (EP) and CAE finite element simulation systems including cross-platform development.

## SELECTED ACHIEVEMENTS

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- 96 publications in scientific journals, collective books and conference proceedings. 3 US and 1 Hungarian patents. (The full list is available upon request or through the MTMT database.)
- Editor and reviewer for the technical journal IEEE Transaction and Magnetics; Member of the editorial board of two series of conferences: the CEFC (IEEE Conference on the Computation of Electromagnetic Fields) and the Compumag (Conference on the Computation of Electromagnetic Fields) Conferences
- Invited expert in standardization committees for IEC (International Electrotechnical Commission) TC 106 and IEEE ICES (International Committee on Electromagnetic Safety) TC 34.
- ePhysics, a multiphysics simulation software – whose development he led at Ansoft Corp. – won the AEI (Automotive Engineering International) Tech 2004 Award.
- Led a team that participated in a Japanese national project, Eddy Current Test for Steam Generator Tubes: ECT, 1992-1998, financed by the Ministry of International Trade and Industry (MITI), Japan.
- Best Technical Contribution Award from Japan Society of Applied Electromagnetics and Mechanics (JSAEM) in 1996.
- Invited presentations at the 11th Int. IGTE Symposium on Numerical Field Calculation in Electrical Engineering, Seggau, Austria, 2004, and at COMPUMAG-Rio, Rio de Janeiro, Brazil, 1997.
- Guest speaker at the Annual Meeting of the Pittsburgh Section of IEEE Magnetics Society, Point Park College, Pittsburgh, PA, U.S.A., November 18, 1999